REMARKS

The abstract is objected to because the word "said" is included therein. The abstract has been redrafted and replaced to overcome this objection.

Claims 1-10 have been rejected under 35 U.S.C. Section 112, second paragraph, as being indefinite for the reasons set forth in the Office Action. The claims have been revised to overcome this rejection.

Claims 1-10 have been rejected under 35 U.S.C. 103(a) as unpatentable over Vos et al. in view of Leung et al. For the following reasons, reconsideration and withdrawal of this rejection is respectfully requested.

The present invention starts from known programs for database administration. The usage of data sets in a database provides for disordering of these. Maintenance will be required once in a while to bring the data sets into order again. However, maintenance of a database is a complicated and time-consuming task. To prevent the database from starting maintenance routines without need, it is necessary to monitor the status of the database content.

As described in paragraph 9 of the specification, in conventional relational databases, the status of the data sets is determined using external programs. The disadvantage of monitoring the status using external programs is that external programs have a negative impact on system performance, since such external monitor programs require many system resources. These programs are also error-prone since they are oriented on the existing database and not integrated in it. When database functions and structures are changed, the external programs have also to be adapted.

However, it is a goal of database providers to provide for 24x7 availability. This all

time availability requires monitoring and maintenance all the time. However, when using external programs that monitor the data sets, the ongoing monitoring causes intensive system load. Thus, a database provider must choose between high integrity of data sets due to constant monitoring and maintenance, or high system performance. Monitoring the data sets intensely using external programs reduces the system performance, but provides for high data integrity. On the other hand, however, reducing the monitoring and maintenance may lead to higher system performance, but may cause inconsistencies in the data sets.

As is described in the specification, external monitoring programs, such as disclosed in Vos et al. are known. Vos proposes a database management system, with which it is possible to monitor and trigger activities based on states of data sets. The database management system, according to Vos, collects statistics and automatically determines and schedules appropriate actions based on the statistics (Vos: sect. 10, 11). Vos et al. provides for a solution, which is separated from the database (Vos: sect. 5, 9). The object advisor operates separately from the existing database program and provides for management functionality (Vos: sect. 51). The object advisor monitors activities and provides for information about database objects and their attributes. The object advisor allows for analyzing database content (Vos: sect. 53, 54).

The Vos reference only teaches to apply an external program onto the existing database (Vos: sect. 61). Applying the object advisor to the DBMS implies that it is not part of the DBMS, but rather an external program. This becomes also apparent from the paragraph 64-68. In particular in section 68, an object statistics collector software is described, which operates on the database, but is not part of the database.

However, in contrast to that, the present invention teaches using a database-integrated

status monitor outputting the determined statuses in real-time using the database-integrated status monitor and analyzing the output status data. The difference between the invention and the Vos reference lies in that the present invention uses database-integrated status monitors rather than external programs.

The same reasoning applies to US 6,282,570 B1 (Leung et al.). That reference also teaches monitoring relational database management system software using a monitoring system (Leung: col. 3, lines 29-35). The monitoring system runs on the same server as the RDBMS software, however, it is not part of this RDBMS software. The database monitor collects the performance statistics based on instructions from the user and communicates with the database server via a structured query language interface (Leung: col. 4, I. 8-15). Thus, when monitoring the RDBMS system, it is queried using the SQL interface for accessing performance information about the collection of databases (Leung: col. 4, 1. 15-25). Thus, when monitoring the RDBMS system, its system performance is reduced.

Accordingly, both Vos and Leung teach the use an external program for monitoring data sets of a database. By way of contract, the claimed invention requires the use of a database-integrated status monitor. Thus, the invention could not be obtained by one of ordinary skill in this art from Vos individually or in combination with Leung.

Claim 1 has been rejected because the claimed subject matter does not fall within the definition of a process under § 101 and is an abstract idea and not a practical application because it does not produce a concrete and tangible result. Applicant respectfully disagrees.

Although the subject matter claimed in Claim 1 involves mathematical manipulation, the result obtained by the method is both concrete and tangible in that it permits the

monitoring and analysis of the status of database content on a real-time, bases to obtain high data integrity without the use of external programs that substantially degrade system performance.

A claim is not directed to non-statutory subject matter merely because it involves mathematical manipulation. In that regard, the examiner's attention is respectfully directed to two Federal Circuit cases reversing decisions of district courts holding that claims relating to the manipulation of mathematical algorithms are non-statutory: <u>State Street Bank & Trust Co. v. Signature Financial Group Inc.</u> 47 USPQ 2d 1596 (Fed. Cir. 1998) and <u>AT&T Corp. v. Excell Communications Inc.</u> 50 USPQ 2d 1447 (Fed. Cir. 1999).

In <u>State Street</u>, the court focused on the proper test for complying with Section 101. In that case, the claims were directed to the transformation of data, representing discrete dollar amounts, by a machine through a series of calculations, into a final share price. The court held that to be a practical application of a mathematical algorithm, formula or calculation because it produced "a useful, concrete and tangible result". The court held, at page 1602:

> ... However, after *Diehr* and *Alappat*, the mere fact that a claimed invention involves inputting numbers, calculating numbers, outputting numbers, and storing numbers, in and of itself, would not render it non-statutory subject matter, unless of course, its operation does not produce a "useful, concrete and tangible result." *Alappat*, 33 F.3d at 1544, 31 USPQ2d at 1557.
> After all, as we have repeatedly stated,
>> every step-by-step process be it electronic or chemical or mechanical, involves an algorithm in the broad sense of the term. Since § 101 expressly includes processes as a category of inventions which may be patented and § 100(b) further defines the word "process" as meaning "process, art or method, and includes a new use of a known

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process, machine, manufacture, composition of matter, or material," it follows that it is no ground for holding a claim directed to non-statutory subject matter to say it includes or is directed to an algorithm. This is why the proscription against patenting has been limited to mathematical algorithms....

In re Iwahashi, 888 F.2d 1370, 1374, 12 USPQ 1908, 1911 (Fed. Cir. 1989) (emphasis in the original)
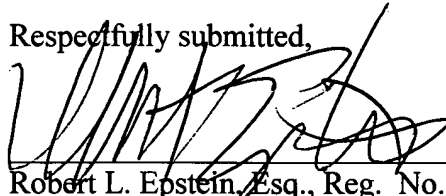
The question of whether a claim encompasses statutory subject matter should not focus on *which* of the four categories of subject matter a claims is directed to – process, machine, manufacture, or composition of matter – but rather on the essential characteristics of the subject matter, in particular, its practical utility. Section 101 specifies that statutory subject matter must also satisfy the other "conditions and requirements" of Title 35, including novelty, non-obviousness, and adequacy of disclosure and notice. *See In re Warmerdam,* 33 F.3d 1354, 1359, 31 USPQ2d 1754, 1757-58 (Fed. Cir.1994). For purpose of our analysis, as noted above, claim 1 is directed to a machine programmed with the Hub and Spoke software and admittedly process "useful, concrete, and tangible result." *Alappat,* 33 F3d at 1544, 31 USPQ2d at 1557. This renders it statutory subject matter, even if the useful result is expressed in numbers, such as price, profit, percentage, cost, or loss.

In <u>AT&T</u>, the court followed the <u>State Street</u> decision, stating, at page 1453, that "... our inquiry here focuses on whether the mathematical algorithm is applied in a practical manner to produce a useful result."

It is respectfully submitted that, in accordance with <u>State Street</u> and <u>AT&T</u>, applicant's claims are not rendered non-statutory merely because they involve mathematical

manipulations. Applicant's method permits the monitoring and analysis of database contents on a real time basis to obtain high data integrity without employing external programs that degrade system performance. That is clearly a concrete and tangible result and complies with the requirements of Section 101 as set forth in the case law.

Respectfully submitted,

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